## (19) World Intellectual Property Organization

International Bureau



# HOLDE BENDEN FOR BURNE 1980 BRID BRID BRID BRID FOR DE BURNE HERE BRIDE BRIDE BRIDE BRIDE BRIDE BRIDE BRIDE BRIDE

(43) International Publication Date 31 March 2005 (31.03.2005)

PCT

(10) International Publication Number WO 2005/029539 A2

(51) International Patent Classification7:

H01L

(21) International Application Number:

PCT/US2004/023483

(22) International Filing Date:

21 July 2004 (21.07.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

60/488,909

21 July 2003 (21.07.2003)

(71) Applicant (for all designated States except US): DEN-DRITIC NANOTECHNOLOGIES, INC. [US/US]; 2625 Denison Drive, Suite B, Mt. Pleasant, MI 48858 (US).

(72) Inventors; and

- (75) Inventors/Applicants (for US only): TOMALIA, Donald, A. [US/US]; 463 W. Chippewa River Road, Midland. MI 48640 (US). HUANG, Boahua [CN/US]; 1408 Abbey Lane, Mount Pleasant, MI 48858 (US).
- (74) Agent: KIMBLE, Karen; Technology Law, PLLC, 3595 North Sunset Way, Sanford, Michigan 48657 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,

CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM. TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH. GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GO, GW, ML, MR, NE, SN, TD, TG).

### Declarations under Rule 4.17:

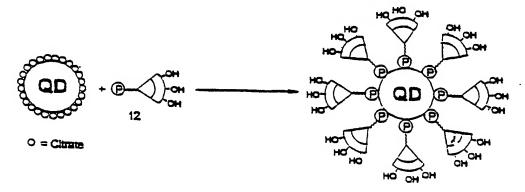
- as to the identity of the inventor (Rule 4.17(i)) for all des-
- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for all designations
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations
- of inventorship (Rule 4.17(iv)) for US only

#### Published:

without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: STABILIZED AND CHEMICALLY FUNCTIONALIZED NANOPARTICLES



(57) Abstract: Dendronization of nano-scale surfaces with focal point reactive dendrons to produce stabilized chemically functionalized nano-particles having quantum dot dimensions.

## (12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

## (19) World Intellectual Property **Organization**

International Bureau



## 

(43) International Publication Date 31 March 2005 (31.03.2005)

PCT

(10) International Publication Number WO 2005/029539 A3

(51) International Patent Classification7: B05D 7/00, 7/24

(21) International Application Number:

PCT/US2004/023483

(22) International Filing Date: 21 July 2004 (21.07.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

60/488,909

21 July 2003 (21.07.2003)

(71) Applicant (for all designated States except US): DEN-DRITIC NANOTECHNOLOGIES, INC. [US/US]; 2625 Denison Drive, Suite B, Mt. Pleasant, MI 48858 (US).

(72) Inventors; and

- (75) Inventors/Applicants (for US only): TOMALIA, Donald, A. [US/US]; 463 W. Chippewa River Road, Midland, MI 48640 (US). HUANG, Boahua [CN/US]; 1408 Abbey Lane, Mount Pleasant, MI 48858 (US).
- (74) Agent: KIMBLE, Karen; Technology Law, PLLC, 3595 North Sunset Way, Sanford, Michigan 48657 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,

MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

#### Declarations under Rule 4.17:

- as to the identity of the inventor (Rule 4.17(i)) for all designations
- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for all designations
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations
- of inventorship (Rule 4.17(iv)) for US only

### Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of

(88) Date of publication of the international search report: 6 May 2005

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: STABILIZED AND CHEMICALLY FUNCTIONALIZED NANOPARTICLES

(57) Abstract: Dendronization of nano-scale surfaces with focal point reactive dendrons to produce stabilized chemically functionalized nano-particles having quantum dot dimensions.